

What is claimed is:

1. An enzymatic cleanser for cleaning of medical equipment and instruments which have bio-residue thereon, said cleanser comprising a composition which consists the following components,
  - water,
  - sodium formate,
  - sodium tripolyphosphate,
  - sodium xylene sulfonate,
  - protease enzyme, and
  - amylase enzyme.
2. A cleanser as in claim 1 wherein said water component is from 64% to 68% by weight.
3. A cleanser as in claim 1 wherein said sodium formate component is from 1 to 2% by weight.
4. A cleanser as in claim 1 wherein said sodium tripolyphosphate component is from 4 to 6% by weight.

5. A cleanser as in claim 1 wherein said sodium xylene sulfonate component is from 9 to 11% by weight.
6. A cleanser as in claim 1 wherein said protease enzyme component is from 3 to 5% by weight.
7. A cleanser as in claim 1 wherein said amylase enzyme component is from 1 to 3% by weight.
8. A cleanser as in claim 1 and also comprising calcium chloride.
9. A cleanser as in claim 8 wherein said calcium chloride component is from 0.1 to 0.3% by weight.
10. A cleanser as in claim 1 and also comprising alkoxylated isopropanolamide.
11. A cleanser as in claim 10 wherein said isopropanolamide component is from 9 to 11% by weight.
12. A cleanser as in claim 1 and also comprising a sodium alkane sulfonate, sodium capryl mixture.
13. A cleanser as in claim 12 wherein said mixture component is from 0.5 to 1.5% by weight.

14. A cleanser as in claim 1 and including a fragrance of 0.1% by weight.
15. A cleanser for cleaning equipment and instruments which have bio-residue such as blood and other body fluids adhered thereto in a dried state, said cleanser comprising a solution which consists of the following components:
  - a solvent,
  - an enzyme stabilizer for removing trivalent metallic ions,
  - a buffer to keep the solution pH near 11 and for removing metallic oxides, carbonates and sulfides,
  - a hydrotropic nonionic surfactant,
  - a compound to remove protein based materials,
  - and a compound to remove carbohydrate based materials.
16. A cleanser as in claim 15 wherein said solvent is water.
17. A cleanser as in claim 16 wherein said water is present from 64 to 68% by weight.
18. A cleanser as in claim 15 wherein said enzyme stabilizer is sodium formate.
19. A cleanser as in claim 18 wherein said sodium formate is present from 1 to 2% by weight.
20. A cleanser as in claim 15 wherein said buffer is sodium tripolyphosphate.
21. A cleanser as in claim 20 where said sodium tripolyphosphate is present from

- 4 to 6% by weight.
22. A cleanser as in claim 15 wherein said hydrotropic nonionic surfactant is sodium xylene sulfonate.
23. A cleanser as in claim 22 wherein said sodium xylene sulfonate is present from 9 to 11% by weight.
24. A cleanser as in claim 15 wherein said compound to remove protein based materials is protease enzyme.
25. A cleanser as in claim 24 wherein said protease enzyme is present from 3 to 5% by weight.
26. A cleanser as in claim 15 wherein said compound to remove carbohydrate based materials is amylase enzyme.
27. A cleanser as in claim 26 wherein said amylase enzyme is present from 1 to 3% by weight.
28. A cleanser as in claim 15 and also containing a nonionic surfactant.
29. A cleanser as in claim 28 wherein said nonionic surfactant is alkoxylated isopropanolamide.
30. A cleanser as in claim 29 wherein said alkoxylated isopropanolamide is 9 to 11% by weight.
31. A cleanser as in claim 15 wherein said compound also contains an anionic

- surfactant which is hydrotropic and low foaming.
32. A cleanser as in claim 31 wherein said anionic surfactant is sodium alkane sulfonate.
33. A cleanser as in claim 32 wherein said sulfonate is present from 0.5 to 1.5% by weight.
34. A cleanser as in claim 15 wherein said composition also contains a fragrance.
35. A method of making a non-toxic cleanser for equipment and instruments which have bio-residue attached thereto, said method comprising,
- adding and mixing the following ingredients,
  - a solvent,
  - an enzyme stabilizer,
  - a buffer for pH,
  - hydrotropic nonionic surfactant,
  - compound to remove protein based materials, and
  - compound to remove carbohydrate based materials,
- mixing all the aforesaid ingredients until all solids are dissolved.
36. A method as in claim 35 wherein said solvent is water from 64 to 68% by weight.
37. A method as claim 35 wherein said enzyme stabilizer is sodium formate from 1 to 2% by weight.

38. A method as in claim 35 wherein said buffer is sodium tripolyphosphate and is present from 4 to 6% by weight.
39. A method as in claim 35 wherein said hydrotropic nonionic surfactant is sodium xylene sulfonate from 9 to 11% by weight.
40. A method as in claim 35 wherein said compound to remove protein based materials is protease enzyme from 3 to 5% by weight.
41. A method as in claim 35 wherein said compound to remove carbohydrate based materials is amylase enzyme from 1 to 3% by weight.
42. A method as in claim 35 wherein said mixture includes calcium chloride from 0.1 to 0.3% by weight.
43. A method as in claim 35 and including the following:
- alkoxylated isopropanolamide, and
- a sodium alkane sulfonate, sodium capryl mixture.
- said isopropanolamide and mixture being combined and then added to the previously mixed ingredients.
44. A method as in claim 43 wherein said isopropanolamide is present from 9 to 11% by weight and said mixture is present from 0.5 to 1.5% by weight.
45. A method as in claim 35 and including a fragrance.

46. A method of cleaning instruments and equipment which have a bio residue thereon, said method comprising,

immersing in and/or applying a composition having the following components to said equipment and instruments,

water from 64 to 68% by weight,

sodium formate from 1 to 2% by weight,

sodium tripolyphosphate from 4 to 6% by weight,

sodium xylene sulfonate from 9 to 11% by weight,

a protease enzyme from 3 to 5% by weight, and

a amylase enzyme from 1 to 3% by weight.

rinsing said equipment and instruments after cleaning.

47. A method as in claim 46 wherein said composition also includes a calcium chloride from 0.1 to 0.3% by weight.

48. A method as in claim 46 which also includes the following ingredients,

alkoxylated isopropanolamide from 9 to 11% by weight, and

sodium alkane sulfonate from 0.5 to 1.5% by weight.

49. A method as in claim 46 wherein said composition also contains a fragrance.

50. An enzymatic cleanser for cleaning of medical equipment and instruments which have a bio-residue thereon, said cleanser comprising a composition which consists of the following components,

water

sodium formate,

sodium tripolyphosphate,

hydrotropic surfactant

protease enzyme,

amylase enzyme, and

a nonionic surfactant.

51. A cleanser as in claim 51 wherein said water component is from 50 to 58% by weight.
52. A cleanser as in claim 51 wherein said sodium formate is from 0.5 to 2% by weight.
53. A cleanser as in claim 51 wherein sodium tripolyphosphate is from 0.5 to 2.5% by weight.
54. A cleanser as in claim 51 wherein said hydrotropic surfactant is from 15 to 20% by weight.



55. A cleanser as in claim 51 wherein said protease enzyme is from 2 to 5% by weight.
56. A cleanser as in claim 51 wherein said amylase enzyme is from 0.9 to 2.5% by weight.
57. A cleanser as in claim 51 wherein said nonionic surfactant is from 4 to 5% by weight.
58. A cleanser as in claim 57 wherein said nonionic surfactant is Alkoxylated Isopropanolamide.
59. A cleanser as in claim 57 wherein said nonionic surfactant is Dehypon LS 54.
60. A cleanser as in claim 51 and also comprising calcium chloride.
61. A cleanser as in claim 60 wherein said calcium chloride is from 0.1 to 0.3% by weight.
62. A cleanser as in claim 51 and also comprising Laural Alcohol Alkoxylate.
63. A cleanser as in claim 62 wherein said Laual Alcohol Alkoxylate is from 3 to 5% by weight.
64. A cleanser as in claim 51 and also comprising a hydrotropic anionic surfactant.
65. A cleanser as in claim 64 wherein said surfactant is sodium alkane sulfonate.

66. A cleanser as in claim 65 wherein said sodium alkane sulfonate is from 0.4 to 0.8% by weight.
67. A cleanser as in claim 51 and including sodium borate decahydrate to improve long term enzyme stability.
68. A cleanser as in claim 67 wherein said decahydrate is from 1 to 2% by weight.
69. A cleanser as in claim 51 and also including 3 to 10% Propylene Glycol by weight.
70. A cleanser as in claim 51 and also including 0.1% Propylparaben as a preservative.
71. A cleanser as in claim 51 and also including 0.1% Methyparaben as a preservative.
72. A cleanser as in claim 51 and also including a fragrance to give the composition a pleasant odor.
73. A method of making a non-toxic cleanser for equipment and instruments which have bio-residue on them, said method comprising
- adding and mixing the following ingredients
  - a solvent
  - enzyme stabilizers
  - a buffer for pH
  - hydrotropic nonionic surfactant

protease enzyme

amylase enzyme

a nonionic surfactant

a solubility improver

a hydrotropic anionic surfactant

sodium borate decahydrate

propylene glycol

mixing all of the aforementioned ingredients until all solids are dissolved.

74. A method as in claim 73 wherein one half of the solvent is first mixed with the enzyme stabilizers to create a first batch, the remainder of the solvent is mixed with the buffer and hydrotropic surfactant to create a second batch, the nonionic surfactant and hydrotropic anionic surfactant are combined with 20% of the decahydrate are combined and then added to the second batch, the protease enzyme, amylase enzyme, propylene glycol and a preservative are added to 80% of the decahydrate to create a third batch, the first batch is cooled and batch 3 is slowly added thereto and the combined batches are then added to batch 2 to finish the method of making the cleanser.
75. A method as in claim 74 wherein a preservative such as propylparaben is added to the third batch.
76. A method as in claim 73 and including adding a fragrance to the mixture to give it a pleasant odor.

- 77. A method as in claim 73 wherein said enzyme stabilizers are calcium chloride and sodium formate.
- 78. A method as in claim 73 wherein said buffer is sodium tripolyphosphate.
- 79. A method as in claim 73 wherein said hydrotropic surfactant is sodium xylenesulfonate.
- 80. A method as in claim 73 nonionic surfactant is alkoxylated isopropanolamide or Dehypon LS 54.
- 81. A method as in claim 73 wherein said hydrotrophic anioinic surfactant is sodium alkane sulfonate.